

Registration of 'Brantley' Peanut

'Brantley' (Reg. no. CV-86, PI 642026) is a large-seeded virginia-type peanut (*Arachis hypogaea* L. subsp. *hypogaea* var. *hypogaea*) cultivar with high oleic fatty acid content in its seed oil, essentially derived from the 'NC 7' cultivar (Wynne et al., 1979). Brantley was tested under the experimental designation N000900l and was released jointly by the North Carolina Agric. Res. Service (NCARS) and the USDA-ARS in 2005. Brantley was tested by the NCARS, by the Virginia Agric. Exp. Stn. (VAES), and five other state agricultural experiment stations participating in the Uniform Peanut Performance Tests (UPPT). Brantley is named in honor of the late Ms. Peggy Y. Brantley, long-time office administrator to the peanut breeding and genetics programs at North Carolina State Univ. (NCSU).

Brantley is a virginia market type cultivar possessing alternate branching pattern, intermediate runner growth habit, medium green foliage, large seeds with tan testa averaging 895 mg seed⁻¹, approximately 65% jumbo pods and 24% fancy pods, and extra large kernel content of approximately 50%. Brantley was developed by backcrossing the high-oleic trait patented by the University of Florida (Norden et al., 1987; Moore and Knauff, 1989; Knauff et al., 1993) into the NC 7 cultivar from Florida line F435 (Moore and Knauff, 1989). In the backcrossing steps, F_{4.5} progenies or individual F₂ seeds were analyzed for fatty acid profiles using gas chromatography (Zeile et al., 1993), and high-oleic families or seeds were selected. BC₄F_{2.3} families were grown in a replicated preliminary yield test in 1999. N000900l was numbered in 2000 on entry into the NCSU Advanced Yield Test series.

Agronomic performance of Brantley has been evaluated in 16 trials conducted by the NCARS breeding program over 5 yr and 24 trials (including early and late diggings as separate trials) in the joint VAES-NCARS Peanut Variety and Quality Evaluation (PVQE) program over 3 yr (Coker and Mozingo, 2004, 2005). Brantley was also tested in the Uniform Peanut Performance Test series conducted at nine sites in seven states in 2003 (Branch et al., 2004). Because it was essentially derived from NC 7 by backcrossing, most characteristics of Brantley are similar to those of NC 7. The following comparisons are based on results from the PVQE program except as noted. Compared with NC 7, Brantley has similar pod yield (4479 vs. 4492 kg ha⁻¹, ns), sound mature kernel content (67%), and meat content (73%), but more jumbo pods (64 vs. 58%, $P < 0.05$), fewer fancy size pods (24 vs. 29%, $P < 0.05$), more extra large kernels (ELK) (53 vs. 48%, $P < 0.05$), and greater jumbo pod brightness (44.5 vs. 43.5 Hunter L score, $P < 0.01$) (Isleib et al., 1997) and average pod brightness (43.9 vs. 43.0 Hunter L score, $P < 0.01$). The ratio of oleic to linoleic fatty acid of Brantley was greater than that of NC 7 (27.77 vs. 2.61, $P < 0.01$).

In the NCSU trials, Brantley had greater brightness of jumbo pods than NC 7 (46.3 vs. 45.5 Hunter L score, $P < 0.01$), greater average pod brightness (45.1 vs. 44.4 Hunter L score, $P < 0.05$), and greater ELK content (46 vs. 43%, $P < 0.01$). Flavor attributes of roasted sound mature kernel samples from eight NCSU trials were evaluated by a trained sensory panel under the direction of USDA personnel. Averaged across eight samples taken from NCARS trials in 2000 and 2002 and adjusted to common values of roast color and fruity attribute (Pattee and Giesbrecht, 1990), the roasted peanut, sweet, bitter, and astringent attributes of flavor in Brantley were not different from those in NC 7, the flavor standard for the virginia market type. Averaged across ELK samples from nine UPPT locations from 2003 (USDA-ARS, 2004), Brantley was not significantly different from NC 7 for intensity of roasted

peanut [4.41 vs. 4.61 flavor intensity units (fiu), ns], sweet (1.98 vs. 2.02 fiu, ns), or bitter (3.07 vs. 2.97 fiu, ns).

Although it was not developed specifically to carry any particular disease resistance, Brantley was evaluated for resistance to diseases common to the Virginia-Carolina region. Because it was essentially derived from NC 7 by backcrossing, it was found to have the same susceptibilities to disease as NC 7. Brantley's reaction to early leafspot (caused by *Cercospora arachidicola* S. Hori) was evaluated from 2001 through 2004 in four field trials with no application of leafspot fungicide during the entire season. Defoliation was rated on a proportional scale of 1 (no defoliation) to 9 (complete defoliation) in late September or early October each year, and yield was measured. Brantley was not significantly different from NC 7 in defoliation (7.0 vs. 6.8 defoliation score, ns) or yield (2380 vs. 2346 kg ha⁻¹, ns). Brantley's reactions to *Cylindrocladium* black rot (CBR) [caused by *Cylindrocladium parasiticum* Crous, Wingfield & Alfenas [syn. *C. crotalariae* (Loos) D.K. Bell & Sobers]] and to Sclerotinia blight (caused by *Sclerotinia minor* Jagger) were evaluated by the NCSU breeding project in four replicated tests on naturally infested soils with no chemical control of the soilborne diseases. Brantley was not different from NC 7 in incidence of CBR (37 vs. 33%, ns) or Sclerotinia blight (28 vs. 44%, ns). Brantley's reaction to *Tomato spotted wilt virus* (TSWV) was evaluated from 2001 through 2004 in four field trials with seeds spaced 50 cm apart and no application of insecticides to control the thrips (*Frankliniella fusca* Hinds), the vector of the virus. Brantley was not different from NC 7 in incidence of TSWV symptoms (44 vs. 36%, ns). Like its recurrent parent NC 7, Brantley should be considered susceptible to all four of these diseases.

Brantley is adapted to the Virginia-Carolina peanut production area but also has performed well in the southeastern US production area including Georgia, Florida, and Alabama.

Breeder seed of Brantley will be maintained by the N.C. Agricultural Research Service, Box 7643, N.C. State University, Raleigh, NC 27695-7643. Foundation seed will be distributed by the N.C. Foundation Seed Producers, Inc., 8220 Riley Hill Rd., Zebulon, NC 27597. The N.C. Agricultural Research Service will provide small (50-100 seed) samples to research organizations for research purposes. An application is pending for protection of Brantley under the U.S. Plant Variety Protection Act as amended in 1994, under which Brantley may be sold only as a class of Certified seed. The high-oleic trait is protected by U.S. Patents (No. 5922,390, 6063,984, and 6121,472) issued to the Univ. of Florida by whose permission the trait was used.

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